Required Supplementary Stewardship Information

Heritage Assets

DEPARTMENT OF DEFENSE CONSOLIDATED HERITAGE ASSETS For Fiscal Year Ended September 30, 2005					
Categories	Unit of Measure	As of 10/01/04	Additions	Deletions	As of 9/30/05
Museums	Each	166	75		241
Monuments & Memorials	Each	2,087		77	2,010
Cemeteries & Archeological Sites	Sites	25,694	68,833	56	94,471
Buildings and Structures	Each	23,533	1,778		25,311
Major Collections	Each	12	78		90

Heritage Assets are real and personal property with importance at the national level due to their significant historical (e.g., buildings on the National Registry of Historical Buildings), natural, cultural, educational, artistic, architectural, or, aesthetic value. Heritage Assets can include museums and/or their collections, art and other collections, archival records, cemeteries, monuments and memorials, and archeological sites.

Establishing items as having heritage significance varies among categories and type of assets. Subject matter experts, criteria such as listing on the National Register of Historic Places, and Federal statutes, all play a significant role in characterizing these assets.

The FY 2005 categories are defined as follows:

Museums. Buildings that house collection-type items including artwork, archeological artifacts, archival materials, and other historical artifacts. The primary use of such buildings is the preservation, maintenance and display of collection-type Heritage Assets.

Monuments and Memorials. Sites and structures built to honor and preserve the memory of significant individuals and/or events in history.

Cemeteries and Archeological Sites. Land on which gravesites of prominent historical figures are located, honored individuals, and/or items of archeological significance are located.

Buildings and Structures. Includes buildings and structures that are listed on, or are eligible for listing on, the National Register of Historic Places, including Multi-Use Heritage Assets. These buildings do not include museums.

Major Collections. Significant collections that are maintained outside of a museum.

Stewardship Land

DEPARTMENT OF DEFENSE CONSOLIDATED STEWARDSHIP LAND For Fiscal Year Ended September 30, 2005				
Land Use	**As of 10/01/04**	**Additions**	**Deletions**	**As of 9/30/05**
	(Acres in Thousands)			
Mission	16,664	5		16,669
Parks and Historic Sites	1	--	--	1
Total	**16,665**			**16,700**

Stewardship Land is land that is not acquired for, or in connection with, items of General Property, Plant and Equipment. All land, regardless of its use, provided to the Department from the Public Domain, or at no cost, is classified as Stewardship Land. Stewardship Land is reported in physical units (acres) rather than cost or fair value.

Nonfederal Physical Property

DEPARTMENT OF DEFENSE CONSOLIDATED NONFEDERAL PHYSICAL PROPERTY Annual Investments in State and Local Governments For Fiscal Years 2001 through 2005					
Categories	**FY 2001**	**FY 2002**	**FY 2003**	**FY 2004**	**FY 2005**
	(In Millions of Dollars)				
Transferred Assets:					
National Defense Mission Related	$95	$7	$85	$54	$71
Funded Assets:					
National Defense Mission Related	$20	$21	$11	$18	$8
Total	**$115**	**$28**	**$96**	**$72**	**$79**

The Department incurs investments in Nonfederal Physical Property for the purchase, construction, or major renovation of physical property owned by state and local governments, including major additions, alterations, and replacements, and the purchase of major equipment; and the purchase or improvement of other physical assets. In addition, Nonfederal Physical Property Investments include federally-owned physical property transferred to state and local governments.

Investment values included in this report are based on Nonfederal Physical Property outlays (expenditures). Outlays are used because current DoD accounting systems are unable to capture and summarize costs in accordance with Federal Accounting Standards Advisory Board requirements.

Investments In Research And Development

DEPARTMENT OF DEFENSE CONSOLIDATED INVESTMENTS IN RESEARCH AND DEVELOPMENT Annual Investments in Research and Development For Fiscal Years 2001 through 2005					
Categories	**FY 2001**	**FY 2002**	**FY 2003**	**FY 2004**	**FY 2005**
	(In Millions of Dollars)				
Basic Research	$1,311	$1,356	$1,444	$1,554	$1,404
Applied Research	3,843	4,311	4,388	4,639	4,527
Development					
Advanced Technology Development	4,383	4,604	5,080	6,178	7,045
Demonstration and Validation	8,166	10,525	11,928	14,779	15,971
Engineering and Manufacturing Development	8,831	9,500	11,234	14,633	16,190
Research, Development, Test & Evaluation Management Support	2,946	3,351	3,210	4,188	4,431
Operational Systems Development	11,000	11,804	12,289	14,906	16,324
Total	**$40,480**	**$45,451**	**$49,573**	**$60,877**	**$65,892**

Investment values included in this report are based on Research, Development, Test and Evaluation (RDT&E) outlays (expenditures). Outlays are used because current DoD accounting systems are unable to capture and summarize costs in accordance with the Federal Accounting Standards Advisory Board requirements.

The DoD Research and Development programs are classified in the following categories: Basic Research, Applied Research, and Development. The following table presents representative program examples for each of the major Research and Development categories and highlights outcomes.

Department of Defense Investment in Research and Development	
Major Program Areas	**Outcomes**
Basic Research Systematic study to gain knowledge or understanding of the fundamental aspects of phenomena and of observable facts • Without specific applications, processes, or products in mind	
Defense Research Sciences	• Provides new technologies for the Army's Future Force, and fosters innovation in niche areas where investment is lacking due to limited markets.
University and Industry Research Centers	• Leverages research in the private sector through Collaborative Technology Alliances, Centers of Excellence, and the University Affiliated Research Centers. Partners with academia, entertainment and gaming industries to leverage innovation research and concepts for training and design.
Digital Signal Processing	• Improved digital signal processing through holography. Holographic technology enables systems to record events in nanoseconds. Advances could lead to significant improvements in our capability to track and identify enemy aircraft and missile threats.
Studying Dolphins to Improve Sonar Techniques	• Improved sonar capabilities that can be leveraged in military, scientific, and natural science applications.
Stress and Mutations - New Method of Fighting Antibiotic Resistance by Stopping Evolution	• Elimination of antibiotic resistance by Identifying biochemical compounds that prevent mutation of bacteria.
Improved Semiconductor Devices	• Enables improved electronics that can perform in harsh environments. Possible applications include: remote-sensing platforms, light-emitting diodes, laser diodes for optical data storage, solar-blind shield surveillance systems, and biological agent detectors.
Biological Simulation Program for Intra-Cell Evaluation (Bio-SPICE)	• Cutting-edge computer modeling, simulation and analysis program, that allows researchers to use molecular methods to detect and assess the threat from pathogens, and to develop radically new methods of molecular medicine for soldier health protection. • Bio-SPICE will all be used to study and develop interventions both natural (immunologic) and therapeutic (pharmacologic).
Magnetism without Magnets	• New and unique way to obtain spin polarized carriers without having ferromagnetic injectors or contacts. This effect is very sensitive to any applied magnetic field and thus is a way to simplify structures non-magnetically and can be immediately applied for military magnetic field sensing.
Applied Research Systematic study to understand the means to meet a recognized specific national security requirement • Systematic application of knowledge to develop useful materials, devices, and system or methods	
Materials Technology	• Matures materials technology for armor and armaments lethality and survivability capabilities to be fielded in the Future Combat Systems and Future Force systems. • Translates new nanomaterials concepts into applications to increase performance and reduce weight of soldier support equipment, armor, armaments, aircraft, and ground combat vehicles.
Combat Vehicle and Automotive Technology	• Improves survivability, mobility, sustainability, and maintainability of Army ground vehicles. • Supports transformation goals by reducing reliance on heavy passive armor using a layered approach, substituting long-rang situational awareness, multi-spectral signature reduction, active protection systems and advanced lightweight armor. • Advanced technologies for critical power, propulsion and electric components, including energy storage, power distribution and pulse forming networks.
Scientists Create World's Tiniest Organic Particles	• Creation of particles, measured in hundreds of nanometers, for carrying genetic material, pharmaceuticals and other compounds of unprecedented small size and uniformity into the human body. • Profound positive impact on future human health care, including chemotherapy, gene therapy, disease detection and drug delivery.
Expeditionary Unit Water Purifier	• Mobile water purification systems that can be airlifted using transport planes to provide potable water for reconstruction, humanitarian aid and disaster relief. • Treatment of water from a variety of sources including turbid or saline water, and feed water that has nuclear, biological or chemical contamination.

Department of Defense Investment in Research and Development	
Major Program Areas	**Outcomes**
Therapy for Sleep Deprivation	• Identification of biochemical pathways that account for inter-individual differences in sleep requirements, the characterization of sleep deprivation resistant brain pathways, nutraceutical interventions for neuron preservation and enhanced learning, and novel pharmaceutical approaches that target sleep induced changes in neural signaling. The first potential transition from this program is an ampakine compound that completely reverses defects in memory and psychomotor performance caused by sleep deprivation.
Chip-Scale Atomic Clock	• Development of a small and power efficient atomic clock for use in portable applications that depend heavily on accurate timing, including jam-resistant global positioning systems, high security communications with ultra-fast frequency hopping rates or long silence intervals, high-channel density communications, high-confidence identification of friends or foes, and missile and even munitions guidance.
High Energy Liquid Laser Area Defense System	• A revolutionary 150 kW high energy laser weapon system for use on tactical platforms at a system weight of 750 kg (5kg/kW) or less.
Kits for Armored Gun Truck for Convoy Escort	• Development of a "Gun Truck" to escort convoys of unarmored or lightly armored vehicles by retrofitting standard 5-ton trucks with kits including steel and armor panels and other hardware. An early prototype truck has been operational in theater with 7th Transportation Battalion for 6 months, and 8 of the newly arrived kits have been fully assembled and are ready for use.
Development Takes what has been discovered or learned from basic and applied research and uses it to establish: • Technological feasibility • Assessment of operability • Production capability Development is comprised of five stages: • Advanced technology development • Advanced component development and prototypes • System development and demonstration • RDT&E management support • Operational systems development	
Test Ranges & Facilities and RDT&E Management Support	Sustains the Department's required developmental test and evaluation capability and operates the developmental test activities required by weapons systems developers. • Operates White Sands Missile Range (NM), Aberdeen Test Center (MD), Yuma Proving Ground (AZ), Aviation Technical Test Center (AL) and Redstone Arsenal (AL). • Supports R&D efforts and includes test ranges, military construction, maintenance support of laboratories, and O&M of test aircraft and ships. • Funds the planning, improvements and modernization for three national asset test centers. - Two efforts utilizing these unique test capabilities are the Propulsion Wind Tunnel Upgrade at Arnold Engineering Development Center and the Threat Simulator Development/Low Radar Cross Section threat modeling and simulation • Provides resources for test planning and safety verification and confirmation. • Achieved successful launches of military satellites, utilizing Titan and Atlas & Delta. • Develops the Family of Advanced Beyond Line of Sight Terminals (FAB-T) to provide robust, secure, strategic and tactical global communications for nuclear and conventional forces.
Electronic Warfare Advanced Technology	• Provides technologies for a secure, mobile, wireless network that operates in diverse and complex terrain. • Also matures: - Protection technologies for tactical wireless networks - Smart communication technologies to enable network and control of unmanned systems shortening the sensor-decider-engagement time to defeat critical targets.
Advanced Tank Armament System	• Improves the deployability and operational effectiveness of rapid response/early entry forces. • Provides immediate response by a lethal, versatile, tactically agile joint force capable of operational maneuver once in the Area of Operations • Leverages common platform/common chassis design which reduces requirements for repair parts and logistics support in the area of operations.
Multiple Launch Rocket System (MLRS) Product Improvement Program	• Supports improvements to MLRS: High Mobility Artillery Rocket System (HIMARS), M270A1, Guided Multiple Launch Rocket System (GMLRS) and GMLRS Unitary munition which provide precision strike capability.

Department of Defense Investment in Research and Development	
Major Program Areas	**Outcomes**
Unmanned Aerial Vehicles Collaborate	• Initiation of the Joint Operational Test Bed System with the goal of improving the war fighting capabilities of unmanned aerial vehicles using a communications network between the vehicles and base stations.
Fast and Flexible, X-CRAFT/ 'Sea Fighter' May Transform Naval Warfare	• Development of new Littoral Combat Ships (LCS) that are fast, highly maneuverable in shallow waters with minimal crew. Designed to help the Navy fight modern-day battles in ways that hulking battleships and giant aircraft carriers can not. The new class of ships is designed for patrolling coastlines, dropping mines or sensors, delivering assault teams, and intercepting or outrunning small terrorist boats. At the same time, they are designed to carry enough missiles and other weapons to bombard a good-sized city or support battlefield troops hundreds of miles inland.
Aluminum Combustor Demonstration Program	• Igniting and fully reacting aluminum with seawater vapor and integration of this technology into undersea power generating systems that power torpedoes and mini-subs.
Advanced Component Development and Prototypes	Comprises programs of system specific advanced technology integration efforts in an operational environment. • Demonstrates Fighter Aircraft Command and Control Enhancement, providing improved, beyond-line-of-sight command and control line with fighter aircraft.
Space Based Infrared System (SBIRS)	• Continues development for the Transformational Satellite Communications System (TSAT), the next-generation communication satellite. • Delivers the Counter Communications System, now operational, which is a transportable ground-based system that denies adversary satellite communications through reversible, non-destructive methods.
Air Defense Command, Control and Intelligence -- Engineering Development	• Integrates Air and Missile Defense (AMD) operations. • Provides joint command and control interoperability and horizontal integration with Patriot, the Terminal High-Altitude Area Defense (THAAD) program, the Medium Extended Air Defense System (MEADS), the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) and short-range air defense weapon systems.
System Demonstration and Engineering Development (SD&ED)	Further develops projects which have not received approval for full production: • Space Based Infrared System Increment 1 Mission Control System (MCS), which reduces manpower by 58% and operations and maintenance costs by 25% • F/A-22 Raptor program, continuing development of the Air Force's next-generation air dominance fighter. Significant accomplishments include: - Completion of Fatigue Testing through 2.68 lifetimes - Commencement of Initial Operational Test and Evaluation - Completion of multiple supersonic AMRAAM and AIM-9 missile shots - Exceeding over 3,100 flight test missions • F-35 Joint Strike Fighter program, developing a family of strike fighter aircraft with maximum commonality among the variants to minimize life cycle costs. Significant accomplishments include: - Completion of the Air System Design Integration and Maturity Review - Pratt & Whitney F135 First Engine to Test - General Electric F136 First Engine to Test